

Docket No. 12571US01

COMBINED DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Ethernet Digital Storage (EDS) Card and Satellite Transmission System

the specification of which:

- * is attached hereto.
- * was filed on _____ as United States Application Number or PCT International Application Number _____ and was amended on _____

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

<u>Number</u>	<u>Country</u>	<u>Day/Month/Year Filed</u>	<u>Is Priority Claimed?</u>
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I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

<u>Application Number</u>	<u>Filing Date</u>
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I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

<u>Serial No.</u>	<u>Filing Date</u>	<u>Patented, Pending, or Abandoned?</u>
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I hereby appoint the following attorneys and/or agents to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

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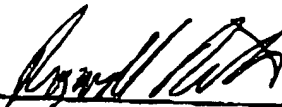
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

This declaration names three (3) inventor(s) below.

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Date Signed:

10-22-99

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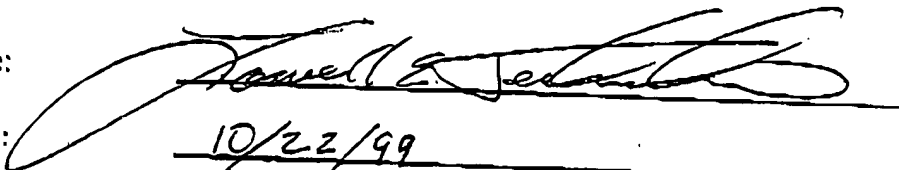
10-22-99

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APPENDIX A

EXHIBIT - 12571US01

EDS Commands

This document describes the Monitor and Control Interface commands for the StarGuide Digital EDS plug-in module. As the command list grows or changes this document will be updated. Several commands are considered "debug" commands and can not be accessed unless the debug command is issued with the correct password.

The following list displays the current set of commands on the EDS Card board. This also happens to be the output of the HELP command.

ADDR	- Addressing Settings
HELP	- Usage Info
E0	- E0 Port Settings
MC	- M&C Config
REBOOT	- Software Reboot
STATS	- Board Statistics
TIME [,value]	- Calendar Time
TIME ZONE[,value,name]	- Local timezone
DIR [path]	- Show directory
SCHED	- Current schedule
VER	- Software Version

If the unit has is in debug mode the following commands can also be accessed:

DEBUG COMMANDS:

COMMUNITY	- SNMP Community Settings
FTP	- Settings for FTP download
HDLC	- HDLC Settings
HOST	- Communicate with Receiver Host
IGMP	- IGMP Settings
MR [address][,length]	- Memory Read
MW <address>,<value>[,value,...]	- Memory Write

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DEBUG

The **DEBUG** command is used to enable various debug modes on the ethernet card. If the debug mode has not been turned on then all of the following commands will return an **ERROR** response (except **DEBUG SDN** which turns debug mode on). The following forms of the command are used:

DEBUG SDN	Turns the debug mode on.
DEBUG OFF	Turns all debug modes off.
DEBUG SHOW	Show the current setting for the debug modes.

DIR

The DIR command is used to display the contents of the Flash Memory Storage of the EDS Card card. This command takes an optional parameter that is the pathname on the drive to list the contents of. If no path is given the root directory is assumed. The forms of the DIR command are shown below:

DIR	Display the contents of the root directory
DIR path	Display the contents of the directory specified by path

A sample display from a DIR command is shown below:

```
>dir
```

MON	DEC	31	17:00:00	1979	98220	TEST.MP2	TestAudioSpot
MON	DEC	31	17:00:00	1979	486912	SPOT.MP2	MyAudio
MON	DEC	31	17:00:00	1979	969	DEFAULT.HTM	
MON	DEC	31	17:00:00	1979	135	TEST.HTM	
MON	DEC	31	17:00:00	1979	112640	TEST.TXT	
MON	DEC	31	17:00:00	1979	<DIR>	TEMP	
TUE	OCT	19	14:21:12	1999	5120	NVRAM.BAK	
TUE	SEP	07	09:27:50	1999	997	TITLES.OLD	
MON	DEC	31	17:00:00	1979	719	PACKAGE.HTM	
WED	OCT	20	18:19:10	1999	874	TITLES.BAK	
THU	AUG	26	19:22:32	1999	599729	TEST.JPG	
MON	DEC	31	17:00:00	1979	32646	LOGO.GIF	
MON	DEC	31	17:00:00	1979	349	AUDIO.GIF	
MON	DEC	31	17:00:00	1979	324	DATA.GIF	
MON	DEC	31	17:00:00	1979	417	IMAGE.GIF	
MON	DEC	31	17:00:00	1979	398	PACKAGE.GIF	
MON	DEC	31	17:00:00	1979	324	PROG.GIF	
MON	DEC	31	17:00:00	1979	336	TXT.GIF	

E0 IP_SUBNETMASK[,addr]	This command sets or queries the IP address subnet mask of the ethernet interface. After and changes have been made the REBOOT command must be issued for the new changes to take affect.
E0 IP_GATEWAY[,addr]	This command sets or queries the IP address of the ethernet interface's default gateway. Any commands coming through the HDLC port to addresses that can not be resolved locally are forwarded to the default gateway. After and changes have been made the REBOOT command must be issued for the new changes to take affect.
E0 IP_ALIAS_ADDR[,addr]	This command sets or queries the IP alias address of the ethernet interface.
E0 IP_ALIAS_ADDR,DELETE	This command deletes the IP alias address of the ethernet interface. The alias is a secondary IP address for the ethernet interface.
E0 IP_ALIAS_NETMASK[,mask]	This command sets or queries the IP alias netmask of the ethernet interface.
E0 SHOW	Display the current settings for the ethernet interface.

FTP

The FTP command is protected by the debug password. The FTP command is used to setup and initiate an FTP software download to flash memory. The items that need to be set prior to initiating an FTP download are the FTP server IP address, the username, and user password in order to access the FTP server. These settings are stored in non-volatile memory.

FTP IP_ADDR[,address]	Sets the IP address of the FTP server
FTP USER[,string]	This is the user string used to log into the FTP server.
FTP PASSWORD[,string]	This is the password used to log onto the FTP server.
FTP GET,filename	This command initiates a download of the file specified. Make sure that the filename includes the entire path to the file. For example “/incoming/v0013.ftp”. The FTP process will report status indicators indicating progress of the download. A “.” will be printed on every download block to indicate that the download is in process.
FTP GET_RCV,filename	This command initiates a download of the file specified for the StarGuide Receiver. The downloaded file is sent through the AUX1 port to the receiver. Make sure that the filename includes the entire path to the file. For example “/incoming/v0013.ftp”. The FTP process will report status indicators indicating progress of the download. A “.” will be printed on every download block to indicate that the download is in process.
FTP GET_RCV,filename,HIF	This command initiates a download of the file specified for the StarGuide Receiver. The downloaded file is sent through the host interface port to the receiver rather than the AUX1 port. In order for this type of download to work, the receiver must have the correct host interface code (Clear Channel Code V1.16 or later or CP Code V3.72 or later). Make sure that the filename includes the entire path to the file. For example “/incoming/v0013.ftp”. The FTP process will report status indicators indicating progress of the download. A “.” will be printed on every download block to indicate that the download is in process.
FTP SHOW	Displays the FTP parameters. The output is shown below.

IP_ADDR:	192.168.3.168
USER:	grasche
PASSWORD:	newguy

HOST

The HOST command is protected by the debug password. The HOST command allows the user to communicate to the host receiver. There are two communication paths available to communicate with the

receiver: internally through the host interface or externally through a cable from the AUX1 port of the ethernet card to the M&C port of the receiver. The first option, internal communication, requires the clear channel receiver code V1.16 or higher. The second option works with any version of receiver code but does require an external cable. The two forms of the HOST command are shown below.

HOST string	This command sends the string specified to the receiver through the internal host interface. Note that the string represents a command to the receiver and as such MUST be in capital letters. If the string contains a comma then it MUST be surrounded by double quote ("") characters.
HOST AUX1,string	This command sends the string specified to the receiver through the external AUX1 connector. Note that the string represents a command to the receiver and as such MUST be in capital letters. If the string contains a comma then it MUST be surrounded by double quote ("") characters.

HDLC

The HDLC command is protected by the debug password. The HDLC command controls the incoming data from the StarGuide II receiver. The data is received over the receiver backplane. The data is ethernet data packets encapsulated in an HDLC stream. One of the other parameters of the HDLC command is the IBS channel IP address and port number. This address (along with the associated port) determines which packets are designated as "in-band signalling".

HDLC DEBUG_LEVEL[,0 1 2]	Sets the debug level for the HDLC processing block.
HDLC DRV_DEBUG[,TRUE FALSE]	Sets the HDLC software driver debug level.
HDLC ENABLE[,TRUE FALSE]	Enables the reception of data from the receiver.
HDLC IBS_IP_ADDR[,value] -	Set the In-Band Control Channel IP address.
HDLC IBS_UDP_PORT[,value] - (1..8000)	Sets the port used for the IBS stream.
HDLC STATISTICS_CLEAR	Clears all HDLC statistics.
HDLC SHOW	Display HDLC parameters and counters. The output is shown below:

```
>HDLC SHOW
debugLevel      0
drvDebug        FALSE
enable          TRUE
config.ibsIpAddr 239.255.0.1(0xEFFF0001)
config.ibsUdpPort 2002
isrCount        0
  Glitch on RX   0
  Flag Status    0
  Rx Frame       0
  Busy Condition 0
  Rx Buffer       0
Rx DPLL Error    0
Rx Length Error  0
Rx Nonalign Frame 0
Rx Abort         0
Rx CRC Error     0
Rx Overrun       0
discardFrameCnt  0
```

```

crcErrorCnt      0
abortErrorCnt    0
ifaceErrorCnt    0

```

The values of the counters increase as IP traffic is received from the SGI receiver.

IGMP

The IGMP command is also hidden behind the debug password. The IGMP command is used to configure the ethernet card's behavior in the presence of an IGMP network. This commands options are shown below.

IGMP DEBUG[,TRUE FALSE]	Enables the debug mode of the IGMP process.
IGMP ENABLE[,TRUE FALSE]	Enables the card's IGMP handling.
IGMP QUERIER_ENABLE[,TRUE FALSE]	In IGMP mode, this command enables the card's query mode.
IGMP QUERY_INTERVAL[,value] - (100..2500)	Sets the query interval in query mode (in 1/10 of second).
IGMP QUERY_RESPONSE_INTERVAL[,value] - (10..255)	Sets the response timeout value (in 1/10 of a second).
IGMP IP_ADDR_BASE[,value] - (0xE0000000..0xFFFFFFFF)	Base address of the IGMP address block.
IGMP IP_ADDR_MASK[,value] - (0xFFFF0000..0xFFFFFFFF)	Sets the mask for the block which determines the size of the address block.
IGMP GROUP_MEMBER,<ip_addr>	Query if a particular IP address is joined or not.
IGMP SHOW	Display the IGMP settings. The response is shown below.

```

>IGMP SHOW
debug          TRUE
querier        TRUE
enable         TRUE
querierEnable  TRUE
queryInterval  600 (1/10 seconds)
queryResponseInterval 100 (1/10 seconds)
ipAddrBase     239.255.0.0 (0xEFFF0000)
ipAddrMask     0xFFFF0000

```

MC

The MC command is used to set the parameters of the monitor and control RS-232 interface. Currently only the baud rate can be set although the parity, data bits, and stop bits will be added to this command in the future.

MC LOGMSG,<TRUE FALSE>	
MC TTY_BAUD_RATE,<value> (range 9600..38400)	Sets the baud rate to the specified setting.
MC SHOW	Displays the current settings for the M&C port.

PING

The PING command is used to check Ethernet connectivity from the EDS Card card to another IP based device. The PING command will send out an ICMP echo request message to the specified IP address. The

command will display the results of the ping messages (either success or failure). If the pings are successful, time results will be displayed. The PING command comes in the following forms:

PING ipAddress<,numPings> Where the ipAddress can either be a dot notation address or a hex number and the numPings represents the number of pings to send. The numPings must be greater than 0. The following results show a successful ping followed by an unsuccessful ping.

```
>ping 192.168.3.1
```

```
taskSpawn ok
```

```
!!
```

```
>PING 192.168.3.1: 56 data bytes
```

```
64 bytes from sd-firewall.starguidedigital.com (192.168.3.1): icmp_seq=0.  
time=4. ms
```

```
64 bytes from sd-firewall.starguidedigital.com (192.168.3.1): icmp_seq=1.  
time=2. ms
```

```
64 bytes from sd-firewall.starguidedigital.com (192.168.3.1): icmp_seq=2.  
time=2. ms
```

```
----192.168.3.1 PING Statistics----
```

```
3 packets transmitted, 3 packets received, 0% packet loss  
round-trip (ms)  min/avg/max = 2/2/4
```

```
>ping 100.1.1.1
```

```
taskSpawn ok
```

```
>PING 100.1.1.1: 56 data bytes
```

```
no answer from 100.1.1.1
```

NV

The NV command is a debug command. The NV command is used to access or display various non-volatile memory locations or structures. Currently it is used to store an event log so all of the options of the command revolve around the log. In the future this command may be converted to a LOG command with various options.

NV DB_CLEAR Clears the entire non-volatile memory database.

NV LOG_CLEAR Clears the event log.

NV LOG_SHOW[index] Displays the contents of the event log.

RCV

The RCV command is used to configure or query critical parameters of the receiver. This command communicates with the receiver via the internal host interface. Thus, the receiver must be running Clear Channel Code Version 1.16 code or newer. The following list shows the options available with the RCV command. Each command option indicates a command that is sent to the receiver. For details on any of the receiver commands, see the StarGuide II User's Manual.

RCV RF[,frequency] - (920000..2050000)

The RF queries or sets the receiver's L-Band frequency in kHz. Valid values are shown in parentheses.

RCV DR[,data_rate] - (512000..8192000)

The DR queries or sets the receiver's data rate in bits per second. Valid values are shown in parentheses.

RCV VR[,viterbi_rate] - (3..4)

The VR command sets or queries the Viterbi decoder rate of the receiver. Valid values are shown in parentheses.

RCV CLR[,clr_mode] - (0..1)

The CLR command sets or queries the Clear Channel Mode of the receiver. Valid values are shown in parentheses.

RCV EB

The EB command queries the current Eb/No reading of the receiver in 10ths of a dB. The higher the number, the better the signal strength.

RCV AG

The AG command queries the current AGC reading on the receiver. The higher this value is the less input signal level there is at the input of the receiver. This value ranges from 0 to 255 and should be kept as near to 128 as possible when configuring the receiver.

RCV SS

The SS queries the current status of the receiver. This value represents a sum of the individual status bits currently active. A value of 0 indicates no errors are currently active. See the StarGuide II User's manual for the bitmap values.

RCV SF

The SF queries the fault history of the receiver. This value represents a sum of the individual status bits that have been activated since the last time they were cleared (using the SF 0 command through either the HOST or HOST AUX1 commands). A value of 0 indicates no faults have occurred. See the StarGuide II User's manual for the bitmap values.

RCV REV

The REV command queries the current software version running in the receiver. This command shows the code versions of the motherboard, the demodulator, and the DSP code.

RCV SHOW

The RCV SHOW command displays the current values of the receiver parameters that are queried. A parameter is queried every 2 seconds and the parameters are queried sequentially. The output of this command looks something like the following.

```
>rcv show
RF: 985000
DR: 6144000
VR: 3
CLR: 1
EB: 7.0
AG: 127
SS: 0x00000000
SF: 0x00000C00
REV: 1.16,8,160
```

REBOOT

The REBOOT command is used to perform a soft boot. The command comes in one form:

REBOOT <arg>

Where *arg* can be either

0: This type of boot causes the system to go through the normal bootup sequence but memory is not cleared.

1: This type of boot causes the reboot to pause at the boot prompt so the user can change any boot parameters. Memory is not cleared in this type of boot.

[illegible]

SCHED

The `SCHED` command is used to display the scheduler's current scheduled events. The command comes in the following forms:

SCHED SHOW Displays the currently active schedules, if any.

SCHED PURGE Delete any exisiting schedule.

SCHED ADD,dT,rly,fid0,[fidN] Add an event to the schedule. The dT parameter indicates an event window time in which the relay specified by rly must occur. If the relay is activated during the active window then the file or files specified by the fid0 through fidN parameters are played from the flash memory disk. If multiple files are specified they are played back to back starting from the first file through the last file.

STATS

The **STATS** command is used to display various bandwidth statistics kept on the board. The statistics include both the ethernet port and the hdlc port.

STATS CLEAR

Clears the statistics.

STATS SHOW

Shows the current statistics. An example of the parameters displayed are shown below. The statistics are kept from the last time they were cleared. The bandwidth statistics show the average bandwidth over the last 5 seconds.

```
>STATS SHOW
```

SATELLITE INTERFACE (s0)

```
10 packets received; 0 packets sent
0 input errors; 0 output errors
1065 bytes received
504 bps (average bandwidth) received
```

Average satellite packet size is 106

ETHERNET INTERFACE (e0)

```
625 packets received; 439 packets sent
0 input errors; 0 output errors
600 collisions
```

```
3 packets routed from s0
849 bytes routed from s0
452 bps (average bandwidth) routed from s0
Average packet size routed from s0 is 283
136 seconds since the statistics were cleared
```

SYSTEM

The system command is used to set or query the SNMP system table strings. This command is a debug command and comes in the following forms:

SYSTEM CONTACT[, "string"]

To set the contact string, the string must be less than 256 characters. The string should be surrounded by double quotes as shown.

SYSTEM LOCATION[, "string"]

To set the location string, the string must be less than 256 characters. The string should be surrounded by double quotes as shown.

SYSTEM DESC[, INIT]

This command can either query the current SNMP description string or re-initialize it. The re-initialization is only needed once after upgrading the code from versions 5-7 to version 8 or newer because the format of the string saved in flash memory was changed. If this is not done the description in the SNMP will indicate both the previous software version AND the new one.

SYSTEM SHOW

Display the current settings for the SNMP System tables. The output of this command is shown below with the card's default strings.

>SYSTEM SHOW

LOCATION:

San Diego, CA 92121 (619)452-4920

CONTACT:

Starguide Digital Networks

TIME

The time command is used to set or query the system time. The StarGuide receiver will set the time based on the network timestamp. An example of the query response is shown below.

940542936, THU OCT 21 14:55:36 1999 PDT (GMT-7)

The time command can also be used to set the current time zone for the EDS Card card since the time is sent in GMT.

VER

The VER command is used to query the current software version. The query response includes the software version, the date and the time the code was built. An example of a query is shown below.

0.0.2, Jan 22 1997, 16:35:50

StarGuide Digital Networks